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A TAXONOMIC STUDY OF EUBAEOCERA NEW GENUS (COLEOPTERA: SCAPHIDIIDAE) IN NORTH AMERICA NORTH OF MEXICO[1]

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Eubaeocera is a widely distributed genus of fungivorous beetles. Because of their small size and concealed habitats—under rotting logs, on mushrooms, in sawdust piles—and their rather uniformly drab appearance, few specimens are collected, although they are almost ubiquitous inhabitants of the forest floor. I have collected specimens by black light, sweeping, sifting, and aspirating, but the most satisfactory method for obtaining *Eubaeocera* and other Scaphidiids is by the "Berlese" method with a modified Tullgren funnel.

The species of *Eubaeocera* within the scope of this study are readily characterized by the shape of the male genitalia. The internal genitalic structures—flagellum, flagellar guide-sclerite, and internal sac—are of use in defining the species and moreover in showing relationships among species, but are generally not shown in the figures for the species since, excepting a few cases, they unnecessarily complicate the figures. The internal guide for the flagellum is shown for *E. cerbera, E. securiforma, E. deflexa, E. youngi,* and *E. congener.*

The terminology used below for the genitalia is mainly from Tuxen (1956) with the following exceptions. Aedeagus here refers to the entire male organ; that is, the lateral lobes or parameres, and the median lobe or penis. A new term, flagellar guide-sclerite, is employed for a dorsal, internal sclerite which apparently functions as a guide for the functional intromittent organ, the flagellum.

The dorsal length of the body was measured from the anterior edge of the head to the posterior median edge of the elytra at rest. This measurement was made at 12.5X with an ocular micrometer while the ventral maximum length of the aedeagus was measured at 50X.

It proved to be impossible to associate the female types of Casey's *Baeocera texana* and *B. discolor,* and the incomplete male type of *B. robustula* with existing or new species. These are considered *nomina dubia* as it is better to risk having one of the new species placed in synonymy than to add misidentifications to the literature.

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Carolina State University, Dr. D. A. Young; Ohio State University, Dr. C. A. Triplehorn; Ontario Agricultural College, Dr. D. Pengelly; Snow Entomological Museum of the University of Kansas, Dr. G. Byers; U. S. National Museum, Dr. J. M. Kingsolver. Mr. W. Rosenburg, Mr. Joe Schuh, and Mr. Vernon Kirk loaned material from their personal collections.

I am particularly indebted to Dr. R. Bénard of the Museum National d'Histoire Naturelle, Paris, who kindly searched for the type specimen of *Scaphidium concolor* F., to Dr. Fritz Hieke of the Zoologisches Museum der Humboldt Universitat, Berlin, for loaning the three specimens of *Baeocera concolor* (F.) studied by W. F. Erichson, and to Dr. Leland Chandler of Purdue University who sent me the lectotype series of *Scaphisoma punctipennis* Blatchley.

Eubaeocera Cornell, NEW GENUS

Baeocera of authors, not Erichson 1845.

TYPE-SPECIES: *Baeocera abdominalis* Casey, 1900, by present designation.

The species in the present study would be referred to the genus *Baeocera* by recent workers, but *Baeocera* Erichson 1845 cannot be so used for the following reasons. Erichson originally designated *Scaphidium concolor* Fabricius 1801 as the type-species for the genus *Baeocera*. Achard (1920) studied the type specimen of *Scaphidium concolor* F. then in the Bosc collection in the French National Museum of Natural History, and stated that it was a specimen of the species *Cyparium flavipes* LeConte 1860, and made *C. flavipes* a junior synonym of *S. concolor*. For unknown reasons he then renamed *B. concolor* (F.) as *Baeocera falsata* Achard. I have learned[3] that the type specimen of *Scaphidium concolor* F. has been lost from the collections of the museum in Paris.

In the interest of stability of nomenclature of *Baeocera, Scaphidium* and *Cyparium,* the following actions are taken here. First, as lectotype of *Cyparium flavipes* LeC., a female specimen in the LeConte Collection now housed at the Museum of Comparative Zoology, Harvard University is selected. This specimen, one of a series of syntypes, bears a small orange paper circle on the pin, a code indicating the specimen is from the southern states. It also bears the MCZ type label Number 6635. The specimen is topotypic and one of LeConte's type series. I have dissected the specimen. The genitalia are in a microvial on the pin bearing the specimen; one antenna is mounted on a microscope slide bearing the original information plus the type number. Both the pin mount and the slide are labeled "Lectotype of *Cyparium flavipes* LeC." Secondly, the lectotype female of *Cyparium flavipes* LeConte is presently selected as the neotype of *Scaphidium concolor* Fabricius. This specimen from the "Southern States" conforms to the type locality of *S. concolor* stated by Fabricius (1801) as being from "Carolina." As a result of this, *concolor* and *flavipes* become objective synonyms with Achard's (1920) action as first reviser. The name *Baeocera* Erichson cannot be correctly applied to the species treated below. The new genus *Eubaeocera* is erected here for *Baeocera* of workers later than Erichson.

Baeocera punctipennis Blatchley 1910, a primary homonym of *B. punctipennis* Matthews 1887, was renamed *B. blatchleyi* Achard (Achard, 1915). Through the courtesy of Dr. Leland Chandler of Purdue University I was able to dissect the lectotype and paralectotypes of this species and on the basis of these dissections *Baeocera blatchleyi* (Achard) is here transferred to *Scaphisoma*

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[3] Dr. Roland Bénard, Museum National D'Histoire Naturelle, Paris, France (personal communication, January 7, 1965).

Leach as *Scaphisoma blatchleyi* (Achard), **NEW COMBINATION**, a change that will not affect the status of *Scaphisoma punctipennis* (Matthews, 1887) earlier transferred to *Scaphisoma* from *Baeocera* by Champion (1913).

Diagnosis. Size small to minute, from 0.9 mm to 2.8 mm long, oval with body fusiform, convex above and beneath, legs progressively longer from the first to the third pair, coxae of each pair widely and about equally separated.

Description. Head deflexed, weakly subquadrate, rounded, slightly wider at middle of eyes than at posterior margin, glabrous; labrum and clypeus about one-third greatest width of head, slightly shorter than head, with minute setae sparsely scattered over surface; eyes large, coarsely granulate, each slightly emarginate along inner margin at antennal insertion; antenna as in Figure 1G, inserted on margin of front in small fovea, segments moderately to sparsely setiferous, with apical 3 segments forming a loose club; frontoclypeal suture distinct, curving basad and under antennal insertions; epistomal suture less distinct than frontoclypeal suture, straight; mandible, labium, and maxilla as in Figures 1F, 1E, and 1D.

Pronotum with width nearly 3 times greatest width of head, almost semicircular in outline, but with anterior margin slightly concave, posterior margin with distinct rounded median lobe, each lateral margin with linear prominence which becomes obsolete at anterior and posterior margins, pronotum projecting laterally under elytral humeri and partially obscuring mesepimera, surface shining throughout, sparsely to moderately punctate or punctulate, punctures each bearing fine decumbent seta. Scutellum present, visible or concealed.

Elytra truncate, moderately convex, slightly widened just before middle, strongly margined along elytral suture, these striae or margins extending entirely around each elytron except at posterior margin, inner apical elytral edges serrate for short distance, surface sparsely covered with more or less regular rows of small decumbent setae set in punctures. Prosternum small, approximately 4 times as wide as long; mesosternum small, approximately 3 times as wide as long; metasternum larger, approximately twice as long as wide, with slightly pubescent median depression which is more pubescent in male than in female.

Legs: Front coxae conical, prominent; middle coxae conical, not prominent; hind coxae transverse, coxae of each pair widely separated; trochanters small. Front leg with femur broad, with row of prominent spines along inner edge; tibia narrower, with setae and spines along inner and outer margins, and 2 large spurs at apex; tarsus very pubescent, with basal 2 tarsomeres weakly lobed, the next 3 narrower. Middle and hind legs each with 1 row of small widely spaced setae along inner edge of femur, with tibia narrow and more densely spiny and setiferous, less densely so on hind tibia than on middle tibia; tarsi with all 5 tarsomeres narrow and pubescent.

Abdomen with 6 visible segments, occasionally more when genitalia strongly extruded, first abdominal segment as long or longer than the next 3 combined, expanded anteriorly in blunt lobe between hind coxae, acetabulae with row of somewhat elongate-oval punctures, segments 2 through 6 progressively smaller, segment 6 modified by median apical lobe, which is more prominent in males than females.

Aedeagus (structures shown in Figures 1A, B) articulate, large, almost filling body cavity; basal half of median lobe expanded, bulbous, apical half narrower; parameres inserted ventrally on bulbous base of median lobe, long and narrow, curving mesad at apex; internal structures more or less heavily sclerotized, consisting of functional intromittent organ, flagellum, and dorsal flagellar guide-sclerite, with internal sac present in some species and ornamented variously with spikes, plates and setae.

Female genitalia with coxite expanded apically from narrow beginning to abrupt lobe at apex, the style a short nipple-like protuberance bearing long apical seta.

Color: Mostly shining black, legs, mouthparts, antennae, and under surface, and apical margin of elytra of many species yellowish to rufous.

Relationships. *Eubaeocera* may be separated from *Toxidium* LeConte which has approximate coxae by its widely spaced coxae. *Eubaeocera* with the third antennal segment long and cylindrical, and the galea of the maxilla acuminate, rounded, with long, widely spaced setae, differs from *Scaphisoma* in which the third antennal segment is subtriangular and short, and the galea of the maxilla widened apically, securiform, with short closely set setae in regular rows. Females of *Eubaeocera* may be separated on genitalic characters from both *Scaphisoma* and *Toxidium* in both of which the coxite is long, narrow, cylindrical, while in *Eubaeocera* the coxite is long and distinctly clubbed at apex.

KEY TO MALE EUBAEOCERA

1. Elytra with maculae at humeri and apices dull red; aedeagus (figs. 2N, 4B) .... HUMERALIS (Fall)
   Elytra immaculate; aedeagus not as above 2
2. Aedeagus with a ventral median keel on basal portion of median lobe 3
   Aedeagus with no ventral median keel on basal portion of median lobe 5
3. Median lobe narrowing abruptly distally, not bent sharply ventrad at apex (figs. 2E, 4E) .... ABDOMINALIS (Casey)
   Median lobe narrowing gradually distally, or expanded at apex, bent abruptly ventrad at apex 4
4. Parameres broad at apex, acuminate, not curving around and over apex of median lobe (figs. 2D, 3J) .... KINGSOLVERI n. sp.
   Parameres broad, truncate at apex, curving around and over apex of median lobe (figs. 2B, 3K) .... DYBASI n. sp.
5. Length of specimen from anterior margin of head to posterior margin of elytra 1.7 mm. or more 6
   Length of specimen from anterior margin of head to posterior edge of elytra 1.6 mm. or less 10
6. Scutellum visible when prothorax normally[1] adjusted to elytra, aedeagus with longer dorsal arm of flagellar guide-sclerite securiform at apex (figs. 3A, 3D) .... SECURIFORMA n. sp.
   Scutellum not visible, flagellar guide-sclerite not as above 7
7. Aedeagal flagellar guide-sclerite with a distinct protuberance on ventral margin of longer, dorsal arm (figs. 2M, 3L) .... YOUNGI n. sp.
   Aedeagal flagellar guide-sclerite without distinct protuberance on ventral margin of longer dorsal arm, not as in above figure 8
8. Aedeagus with flagellum long, slender, sharply angulate near midlength; flagellar guide-sclerite apex broadly bifid (figs. 3B, 3C) .. DEFLEXA (Casey)

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[1] Normally adjusted means closely fixed to the elytra; when specimens are dissected the scutellum is often exposed by unnaturally separating the prothorax from the bases of the elytra. The scutellum is best seen in direct illumination from the side adjusted so as to cast shadows.

Aedeagus with flagellum in form of broad, twisted, reclining, Arabic numeral "6," not sharply angulate near midlength, flagellar guide-sclerite bifid or not at apex 9

9. Aedeagus short and broad in ventral aspect; parameres broad, sinuate on outer margin at base only; flagellar guide-sclerite with longer, dorsal arm bifid at apex (figs. 3E, 3I) .... CERBERA n. sp.

Aedeagus narrower, not short and broad, in ventral aspect, parameres broad, sinuate along inner and outer margins; flagellar guide-sclerite with ventral margin overhanging dorsal margin, forming a notch (figs. 2A, 3H) .... CONGENER (Casey)

10. Parameres broad, in lateral aspect, truncate at apex, with tooth on inner margin in ventral aspect, median lobe apex and internal structures complex (figs. 2K, 3G) .... MITCHELLI n. sp.

Parameres narrow, in lateral aspect not truncate at apex, not as in above figure 11

11. Parameres in ventral aspect with inner and outer margins subparallel, without curved notch on inner margin just before apex 12

Parameres in ventral aspect with inner and outer margins subparallel, with curved notch on inner margin just before apex 15

12. Scutellum not visible when pronotum normally adjusted to elytra, aedeagus (figs. 2F, 4F) .... APICALIS (LeConte)

Scutellum visible when pronotum normally adjusted to elytra, aedeagus not as in above figure 13

13. Parameres in lateral aspect not expanded at apex; flagellum an asymmetrically curved, thick spiral with apex bent abruptly dorsad (figs. 2I, 3F) .... NANA (Casey)

Parameres in lateral aspect expanded somewhat at apex, flagellum not an asymmetrically curved, thick spiral with apex bent abruptly dorsad, not as in above figure 14

14. Parameres in lateral aspect expanded strongly ventrally, flattened dorsally; apex of median lobe not crenulate, in lateral aspect excavated ventrally (figs. 2G, 4K) .... EURYDICE n. sp.

Parameres in lateral aspect expanded slightly dorsally and ventrally; apex of median lobe finely crenulate, in lateral aspect excavated dorsally (fig. 2H, 3M) .... PALLIDA (Casey)

15. Aedeagus in lateral aspect with dorsal posterior edge at ostium appearing multilayered; parameres long, slender (figs. 2L, 4A) .... PICEA (Casey)

Aedeagus in lateral aspect with dorsal posterior edge at ostium appearing single-layered; parameres variable 16

16. Parameres in lateral aspect, narrow, subparallel-sided, apex not distinctly narrowed; flagellum with a distinct anterodorsally directed "heel" at angle (figs. 2J, 4C) .... CHARYBDA n. sp.

Parameres in lateral aspect broader, sinuous, apex distinctly narrowed ventrally; flagellum with very slight or no anteroventrally directed "heel" at angle (figs. 2C, 4D) .... SCYLLA n. sp.

Eubaeocera abdominalis (Casey), NEW COMBINATION

Baeocera abdominalis Casey, 1900:58.

Length 1.0-1.2 mm. Scutellum not visible; antenna (Figure 2N); aedeagus (Figures 2E, 4E), 0.45 mm long, median lobe long, narrow, tapering distally but slightly expanded at apex, a median ventral keel present on basal portion of median lobe (keel may be so transparent as to be almost invisible in some specimens); parameres large, acuminate, each broadly curved on outer margin, inner margin nearly sinuate; internally with flagellum long, slender, curved abruptly dorsad at apex, flagellar guide-sclerite small with anterior edge broadly curved dorsad, posterior edge with two protuberances, one projecting caudad, the other dorsad.

The writer dissected the type specimen which is in the U.S.N.M., T. L. Casey Collection. The type is from Tyngsboro, Massachusetts; additional specimens were examined from Maine, Massachusetts, Maryland, New Jersey, North Carolina, and Illinois.

Eubaeocera abdominalis (Casey) closely resembles *E. kingsolveri* n. sp., but differs from that species in having a narrower median lobe that is not fluted at the apex.

Eubaeocera kingsolveri Cornell, NEW SPECIES

Length 1.3 mm. Scutellum not visible; antennae as in Figure 40. Aedeagus as in Figures 2D, 3J, 0.54 mm long, median lobe broad, not tapering, apex a ventrally curving expanded lobe subtended laterally by 2 narrow slits, basal portion with prominent median ventral keel; parameres each thick, extending well beyond apex of median lobe, in ventral view with margins subparallel, a row of 4 to 6 denticles on outer margin just before apex; internally with flagellum long, slender, curving abruptly ventrad at apex, flagellar guide-sclerite large, bent abruptly dorsad at both ends.

Holotype male, near Aberdeen, North Carolina, 8 Oct. 1964 (J. F. Cornell and T. B. Mitchell) from abandoned gravel pit. The specimen was collected in a modified Tullgren funnel together with *E. mitchelli* n. sp. and *E. abdominalis* (Casey), from a mixed clump of moss, reindeer lichen, and two small agaricine mushrooms. One paratype, Tallula, La. (J. W. Folsom) 19 VI 1934. Type on indefinite loan to the U. S. National Museum from N. C. State University, paratype in Museum of Comparative Zoology.

E. kingsolveri n. sp. resembles externally *E. abdominalis* (Casey), both lacking a scutellum and being rather roundly oval in outline, but may be readily distinguished by the characters discussed under *Eubaeocera abdominalis* (Casey).

I take pleasure in naming this species after Dr. John M. Kingsolver who was very helpful to me during the course of this study.

Eubaeocera dybasi Cornell, NEW SPECIES

Length 1.5-1.6 mm. Scutellum visible, large; antennae as in Figure 4I. Aedeagus as in Figures 2B, 3K, 0.85 mm long, with a prominent median ventral keel on basal portion of median lobe, median lobe tapering broadly to distal end, then enlarged and recurved ventrad, a shallow median trough extending from just before posterior base of paramere to apex of median lobe, and ornamented internally on both sides just before apex with a crenulate rounded process on a short stalk arising from outer walls of trough; parameres each broadly curved on inner and outer margins, curving around and over the apex of median lobe, extending well beyond apex of median lobe, in lateral aspect with apex truncate; internally with flagellum large, bluntly rounded at apex, flagellar guide-sclerite large, expanded at posterior end, tapering distally to broad point.

Holotype male, San Diego, Texas, 8.12 (Hubbard and Schwarz), one topotypic paratype, 9.12 and one paratype, Beeville, Texas, 3.11 (Hubbard and Schwarz). Type and second paratype in U.S.N.M. First paratype in author's collection.

Eubaeocera dybasi n. sp. is readily distinguished from all other species in the genus by its truncate parameres that curve around and over the median lobe.

I take pleasure in naming this species after Dr. H. S. Dybas who has been very encouraging to me during this study.

Eubaeocera apicalis (LeConte), NEW COMBINATION

Baeocera apicalis LeConte, 1860:328.

Length 1.2-1.4 mm. Scutellum not visible; antenna as in Figure 4L. Aedeagus as in Figures 2F, 4F, 0.50 mm long, median lobe rather narrow, with ventral margin of basal portion flattened, apex broad, sculptured dorsally at base of parameres and just posterior to that point with faint embossed lines which partly encircle narrower portion of median lobe; parameres narrow, curving strongly mesad, not expanded apically in lateral view; internally with flagellum shaped like a reclining Arabic numeral "6," bifurcate just beyond middle, flagellar guide-sclerite produced anteriorly and ventrally as a narrow lobe, curving dorsad of and extending along flagellum, apex thicker and shallowly bifid.

The type specimen in the LeConte Collection at M.C.Z. has been dissected by the writer. The type is from "Southern States." Additional specimens have been seen from Maine, Connecticut, Massachusetts, Pennsylvania, New Jersey, Virginia, North Carolina, Michigan, Illinois, Indiana, Kentucky, and Missouri.

Eubaeocera apicalis (LeConte) closely resembles *E. pallida* (Casey) and *E. eurydice* n. sp. However, it does not have a visible scutellum as do these two species, and its broad unexpanded parameres differ from the narrow ones of the two mentioned species.

Eubaeocera pallida (Casey), NEW COMBINATION

Baeocera pallida Casey, 1900:58.

Length 1.2-1.4 mm. Scutellum visible, minute; antenna as in Figure 4M. Aedeagus as in Figures 2H, 3M, 0.35 mm long, median lobe tapering to a point, the apex crenulate; parameres each extending just beyond apex of median lobe, narrow, slightly expanded dorsally and ventrally in lateral aspect, and with margins subparallel in ventral aspect; internally with flagellum similar to *E. apicalis* (LeConte), curving sharply ventrad at apex, flagellar guide-sclerite present.

The type specimen in the T. L. Casey Collection at the U.S.N.M. was dissected by the writer. The type locality is near Philadelphia, Pennsylvania; additional specimens have been examined from Missouri and Tennessee.

The aedeagus of *E. pallida* resembles that of a minute *E. apicalis* (LeConte) but may be readily differentiated therefrom by its dorsoventrally expanded parameres in lateral aspect and the crenulate apex on its median lobe. It further differs from *E. apicalis* (LeConte) in having a minute visible scutellum.

Eubaeocera eurydice Cornell, NEW SPECIES

Length 1.1-1.2 mm. Scutellum visible, minute; antenna as in Figure 4S. Aedeagus as in Figures 2G, 4K, 0.26 mm long, basal portion of median lobe flattened ventrally, a broad notch on dorsal margin at about middle, median lobe tapering to rounded apex; parameres each extending well beyond apex of median lobe, in lateral aspect, ventral margin, distinctly broadened ventrally before apex, dorsal margin flattened, in ventral aspect subparallel-margined, broad; internally with flagellum similar to *E. apicalis* (LeConte), flagellar guide-sclerite broadly lobed at base, narrower at posterior apex.

Holotype male, Santa Rita Mountains, Arizona, 15.6 (Hubbard and Schwarz). Two paratypes, one topotypic, 16.6 in the author's collection, and one Chiricahua Mountains, Arizona, 2.7 (Hubbard and Schwarz) with the number 1222 on the pin-label, in U.S.N.M.

Eubaeocera eurydice n. sp. most closely resembles *E. pallida* (Casey) and *E. apicalis.* Besides the distinguishing characters given in the key and in the discussion of the latter two species, *E. eurydice* has a smaller aedeagus.

Eubaeocera picea (Casey), NEW COMBINATION

Baeocera picea Casey, 1893:516.

Length 0.1-1.4 mm. Scutellum visible; antenna as in Figure 4J. Aedeagus as in Figures 2L, 4A, 0.60 mm long, median lobe narrowing sharply beyond basal portion then expanding gradually to form a broadly rounded apex ventrally, dorsally with margin narrower, notched deeply at apex, with darker sclerotized area along ventral margin of apical portion of median lobe forming shallow trough along ventral surface of median lobe; ostium covered by flaps arising from distal sides of median lobe; these in lateral aspect giving a characteristic multi-layered appearance to posterior dorsal edge of median lobe; parameres extending well beyond median lobe, in ventral aspect curving broadly, margins subparallel, a shallow curved notch on inner margin just before apex, inner margin transluscent to transparent in distal half, covered with minute pores; internally with flagellum long slender, abruptly bent ventrad about at base of apical one-third, the angle not produced anteriorly or dorsally, flagellar guide-sclerite large, asymmetrical.

The type specimen in the T. L. Casey Collection at the U.S.N.M. was dissected by the writer. The type is from Pennsylvania; additional specimens have been examined from Maine, Massachusetts, Michigan, Wisconsin, New York, Illinois, Indiana, New Jersey, District of Columbia, West Virginia, North Carolina, and South Carolina.

Eubaeocera picea (Casey) may be separated from most other species by the apparently lamellate posterior dorsal margin of the median lobe. The lack of a "heel" on the flagellum separates it from both *E. scylla* n. sp. and *E. charybda* n. sp.

Eubaeocera scylla Cornell, NEW SPECIES

Length 1.1-1.4 mm. Scutellum present, ogival, distinct; antenna as in Figure 4G. Aedeagus as in Figures 2C, 4D, 0.45 mm long, median lobe tapering abruptly to a broadly angular apex, with darker sclerotized area along ventral margin extending from apex to just before bulbous basal portion of median lobe, darker zone about one-third width of median lobe; parameres each in ventral aspect with margins subparallel, a distinct curved notch on inner margin just before apex, in lateral view with dorsal and ventral margins sinuous, ventral margin converging to dorsal margin making the apex noticeably narrowed; internally with flagellum long, slender, sharply angled at about posterior one-third of length and directed abruptly ventrad, angle only slightly if at all produced either anteriorly or ventrally as a slight "heel," flagellar guide-sclerite large, asymmetrical.

Holotype male, Whispering Pines (Near Southern Pines), Moore County, North Carolina, 8 Oct., 1964 (J. F. Cornell and T. B. Mitchell) from litter under oak and pine logs, on indefinite loan to U. S. National Museum from N. C. State University. Paratypes: seven topotypic paratypes, same data as type, deposited in the U. S. National Museum, Museum of Comparative Zoology, Chicago Natural History Museum, N. C. State University Collection, and the author's collection; three N. C. Pender Co. nr. Ivanhoe, 11, VI, 1964 (J. F. Cornell & C. D. Mampe) from pine slab pile, in Oregon State University Collection, California Academy of Science collection, and the author's collection; two N. C. Wake Co., Raleigh, 9 May 1964 (J. F. Cornell) from pine logs and litter; two N. C. Reedy Creek State Park, 16 April, 1964 (J. F. Cornell and G. Matuza) from trash under pine logs; one N. C. Holly Shelter Game Refuge, 24 IX, 1964, (J. F. Cornell and T. B. Mitchell) from pine-oak logs and litter; and one N. C. Sampson Co. 6 miles N. Salemburg on N. C. 242, 2 V, 1964, (J. F. Cornell) from oak-pine logs, all in the author's collection; and one N. C. Wake Co., Raleigh, 25 April, 1964, (J. F. Cornell and B. S. Heming) from deciduous woods trash in Ohio State University Collection.

Eubaeocera scylla n. sp. closely resembles *E. charybda* n. sp. and *E. picea* (Casey). It differs from *picea* in having a single layered posterior edge to the median lobe, *picea* having a multi-layered edge. It differs from *charybda* in having sinuate rather than straight parameres, a wide sclerotized area on the ventral margin of the median lobe, and by lacking a pronounced "heel" at the angle on the flagellum, *charybda* having such a "heel."

Eubaeocera charybda Cornell, NEW SPECIES

Length 1.2-1.4 mm. Scutellum visible, distinct; antenna as in Figure 4P. Aedeagus as in Figures 2J, 4C, 0.63 mm long, with median lobe tapering to rounded apex, a darker sclerotized area extending from apex of median lobe along ventral margin to just before bulbous basal portion, this area about one-half width of median lobe, and forming sides of a shallow median trough along ventral surface of median lobe; parameres each with margins subparallel in lateral view, with a distinct slightly curved notch on inner margin just before apex in ventral view; internally with flagellum long, slender, with an angular bend about one-third distance from distal end, angle produced anterodorsally as a distinct "heel," flagellar guide-sclerite broad, asymmetrical.

Holotype male, Putnam, Illinois, Nov. 2, 1933 (Frison and Ross) at Lake Senachwine from ground cover on wooded banks in collection of Illinois Natural History Survey, Urbana, Ill. One topotypic paratype is in the author's collection. Other specimens were examined from Massachusetts, Illinois, Iowa, and North Carolina.

Eubaeocera charybda n. sp. closely resembles *E. scylla* n. sp. and *E. picea* (Casey) and is distinguished from those species in the respective discussions.

Eubaeocera deflexa (Casey), NEW COMBINATION

Baeocera deflexa Casey, 1893:515

Length 2.3-2.6 mm. Scutellum not visible; antenna as in Figure 4T. Aedeagus as in Figures 3B, 3C, 1.0 mm long, median lobe tapering to a rounded apex,

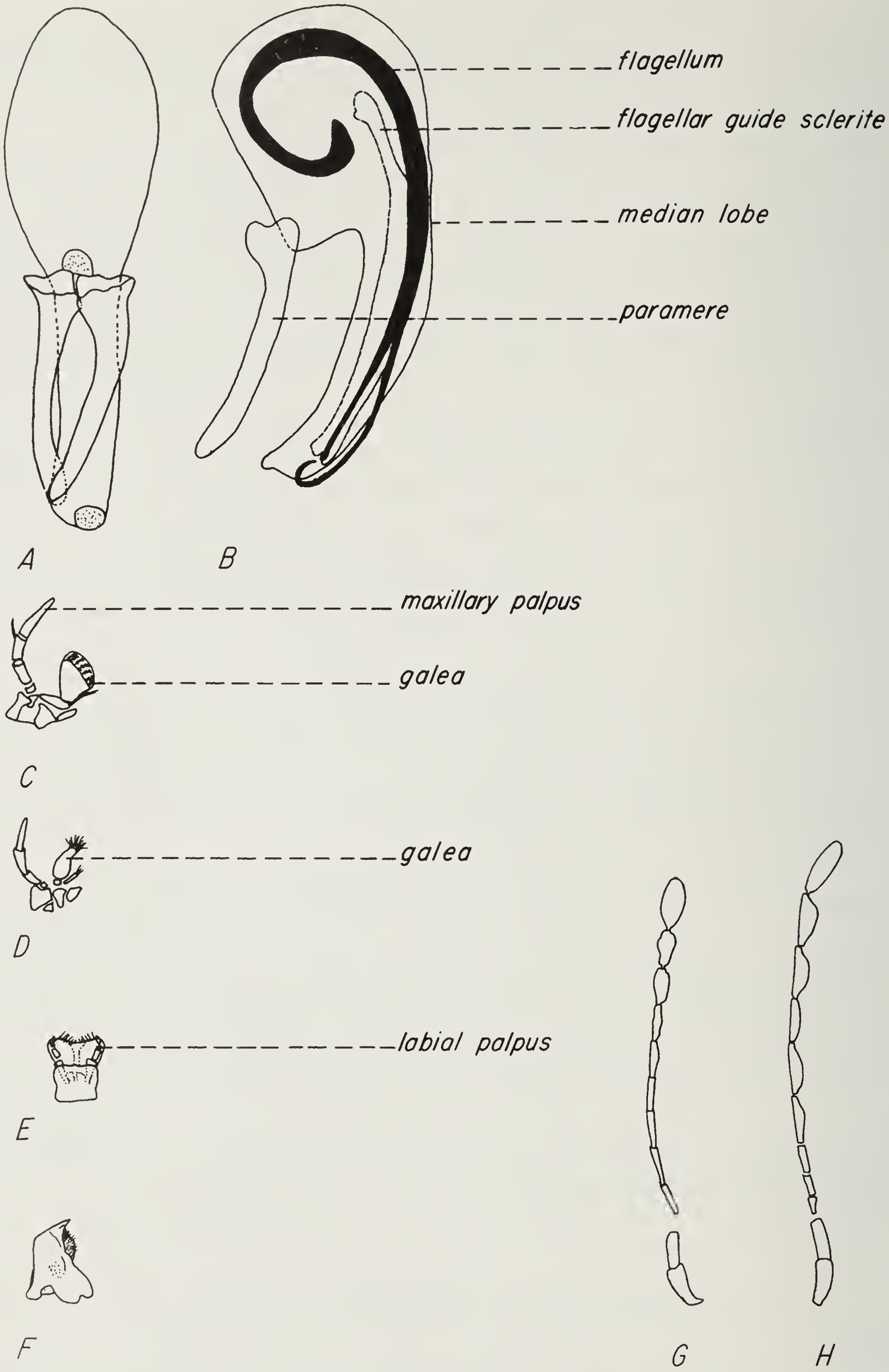


FIGURE 1. Nomenclature of aedeagus of *Eubaeocera* and comparison of mouth-parts and antenna of *Eubaeocera* and *Scaphisoma*. A—Ventral view of aedeagus of *Eubaeocera apicalis* (LeC.). B—Lateral view of aedeagus of *Eubaeocera apicalis* (LeC.). C—Maxilla of *Scaphisoma sp.*, ventral view. D—Maxilla of *Eubaeocera sp.*, ventral view. E—Labium of *Eubaeocera sp.*, ventral view. F—Mandible of *Eubaeocera sp.*, ventral view. G—Antenna of *Eubaeocera sp.* H—Antenna of *Scaphisoma sp.*

abruptly curved ventrad at apex; paramere strongly expanded just before base, narrowed at base and narrowing distally in lateral aspect, sinuous along inner and outer margins, with distinctive membranous flap at base on inner margin in ventral aspect; internally with flagellum long, narrow, a distinct angle at about midlength, bifurcating beyond this point as two very slender rami, flagellar guide-sclerite as in Figure 3C, somewhat variable in shape and size, but readily correlated with above figure.

The type in the T. L. Casey Collection at the U.S.N.M. was dissected by the writer. The type is from Boston Neck, Rhode Island; additional specimens have been examined from Massachusetts, New Hampshire, New Jersey, Pennsylvania, Virginia, North Carolina, Texas, and Colorado.

Eubaeocera deflexa (Casey) is distinctive among other species in its size range in having a distinctly angular flagellum, parameres that are rounded at the base in lateral aspect, and flap-like membranous lobes on the inner ventral margin of each paramere base.

Eubaeocera youngi Cornell, NEW SPECIES

Length 2.3-2.7 mm. Scutellum not visible; antenna as in Figure 4W. Aedeagus as in Figures 2M, 3L, 1.0 mm long, median lobe narrowing to a sharp point that is slightly bent ventrad at apex; parameres in lateral aspect thick, bending abruptly ventrad just before apex, in ventral aspect with outer margin gently curved, inner margin sinuate; internally with flagellum as in *E. congener* (Casey), flagellar guide-sclerite digitate, longer dorsal lobe with a slight protuberance on ventral margin, just before apex, other lobe shorter, unornamented.

Holotype male, Glenwood, Colorado, 15.5 (Hubbard and Schwarz), in the U.S.N.M. Other specimens examined from Ontario, Saskatchewan, Maine, Michigan, Wisconsin, Massachusetts, Indiana, New Jersey, West Virginia, and South Carolina (on a beach).

This is probably the species Erichson had at hand when he erected the genus *Baeocera* (his specimen is a female). It may be recognized by the characteristic bumb on the ventral margin of the flagellar guide-sclerite, and by the rather angular parameres in lateral aspect.

I am pleased to name this species for Dr. D. A. Young who was of considerable help to me throughout the study.

Eubaeocera congener (Casey), NEW COMBINATION

Baeocera congener Casey, 1893:515.
Baeocera speculifer Casey, 1893:515. (NEW SYNONYMY)

Length 1.8-2.0 mm. Scutellum not visible; antennae as in Figure 4U. Aedeagus as in Figures 2A, 3H, 0.70 mm long, median lobe tapering gradually to pointed apex; parameres extending beyond median lobe, broad, in ventral aspect sinuate on inner and outer margins; internally with flagellum of two intertwining sclerites that in lateral aspect resemble somewhat a broad, asymmetrical, skewed, reclining Arabic numeral "6," bifurcating for distal one-third or less; flagellar guide-sclerite shown in above figure by dashed lines, with characteristic notch in apex.

The type specimen of *congener*, in the T. L. Casey Collection at the U.S.N.M., was dissected by the writer. The type is from New York; additional specimens have been examined from Quebec, Manitoba, Saskatchewan, Massachusetts, Illinois, Indiana, Iowa, Nebraska, Kansas, District of Columbia, North Carolina, South Carolina, Georgia, Florida, Alabama, Louisiana, Arkansas, Texas, and New Mexico.

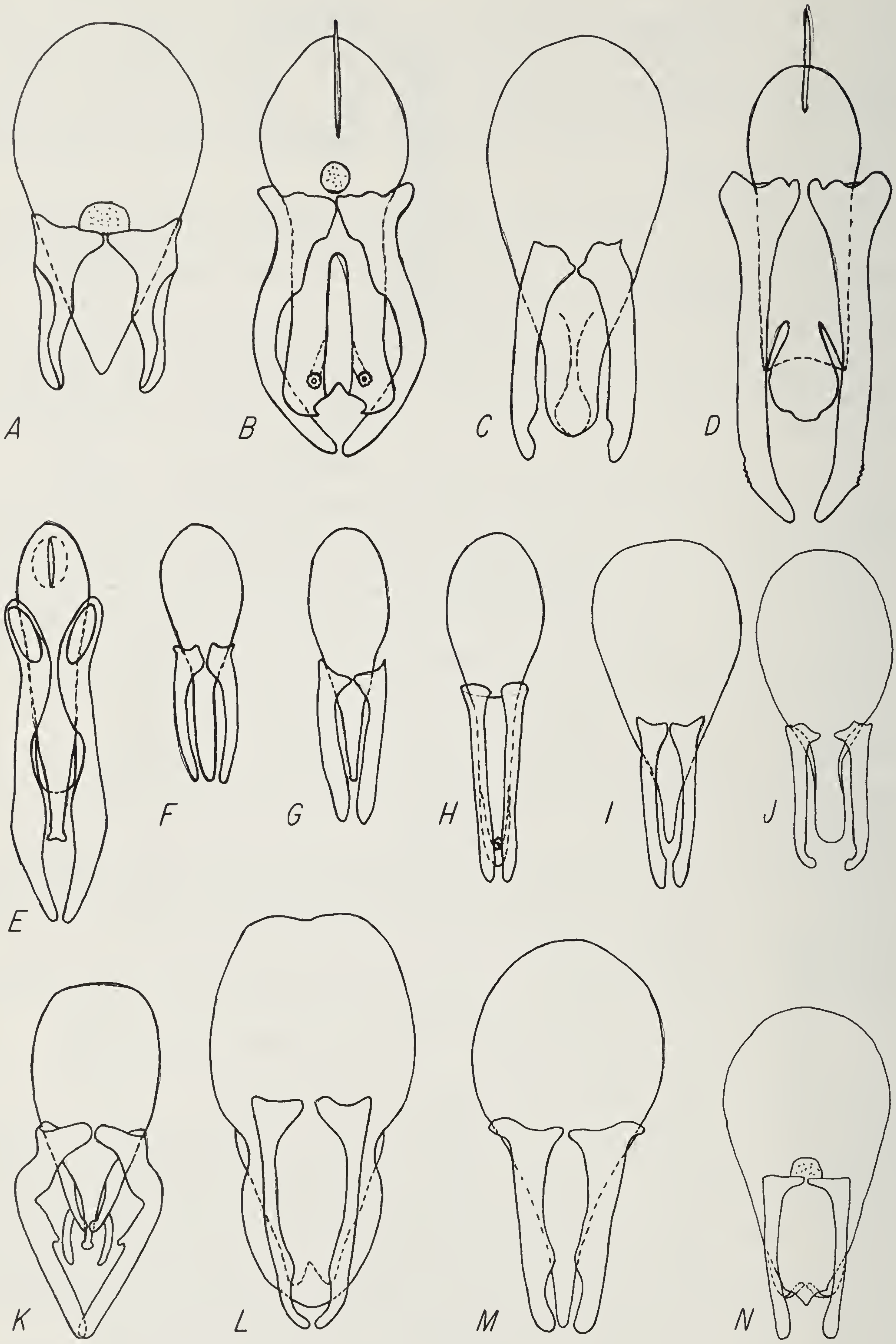


FIGURE 2. Ventral view of aedeagus of *Eubaeocera* spp. A—*congener*. B—*dybasi*. C—*scylla*. D—*kingsolveri*. E—*abdominalis*. F—*apicalis*. G—*eurydice*. H—*pallida*. I—*nana*. J—*charybda*. K—*mitchelli*. L—*picea*. M—*youngi*. N—*humeralis*.

Eubaeocera congener (Casey) is readily recognized by its large size, lack of scutellum, and typically notched flagellar guide-sclerite. It is most closely related to *E. cerbera,* from which it is distinct in the differently notched apex of the flagellar guide-sclerite.

Eubaeocera cerbera Cornell, NEW SPECIES

Length 1.7 mm. Scutellum absent; antenna as in Figure 4V. Aedeagus as in Figures 3E, 31, 0.63 mm long, with median lobe tapering gradually to apex; parameres extending well beyond tip of median lobe, thick, curved abruptly ventrad just beyond middle, in ventral aspect broad, sinuate along outer margin at base, more evenly curved along inner margin, rather densely punctuate at apex and along distal half of inner margin; internally with flagellum similar to *E. congener* (Casey), flagellar guide-sclerite with bifid, notched apex.

Holotype male, Davis Mountains, Jeff Davis County, Texas, 13 VII 1948, from oak-pinion-juniper litter, in the University of Arizona, Tucson, Arizona, and paratype, Santa Catalina Mountains, Arizona, 1-21-58 in the M.C.Z. Collected by Berlese funnel at 6,000 feet (C. W. O'Brien).

Eubaeocera cerbera n. sp. greatly resembles *E. congener* (Casey), but is readily recognized by the short, broad appearance of the aedeagus, and by the shape of the apex of the flagellar guide-sclerite, both of which characters differ from *E. congener.*

Eubaeocera securiforma Cornell, NEW SPECIES

Length 2.1 mm. Scutellum visible, large; antenna as in Figure 4X. Aedeagus as in Figures 3A, 3D, 0.94 mm long, median lobe tapering to a point; parameres each extending to just beyond apex of median lobe, broad, evenly curved along outer margin, sinuate along inner margin; internally with flagellum similar to *E. congener* (Casey), flagellar guide-sclerite with apex bent abruptly dorsad, securiform.

Holotype male, Marietta, Ohio, 10.11 (Hubbard and Schwarz), in U.S.N.M.

This species may later be included within the limits of *E. congener* (Casey), but it differs drastically in the shape of the apex of the flagellar guide-sclerite, and has a visible scutellum.

Eubaeocera humeralis (Fall), NEW COMBINATION

Baeocera humeralis Fall, 1910:116

Length 1.7-1.9 mm. Elytra at humeri and apices with poorly defined dull reddish maculae. Scutellum visible. Aedeagus as in Figures 2N, 4B, 0.60 mm long, median lobe broad, ventrally flattened, with a dorsal lip formed by the infolding of the ostial margin, the lip deeply punctate, ventral margin produced as a triangular median point; parameres each extending beyond median lobe, expanded slightly at apex; internally with a short, retort-shaped sclerite at ventral apex of median lobe, flagellum broad, asymmetrical, hammer-like at apex, flagellar guide-sclerite not apparent, internal sac present, in repose folded under and around flagellum, when extruded expanded as a subovate spheroid covered with short spike-like protuberances, the spikes more numerous dorsally and ventrally than medially.

The type (a female) is in the Henry Clinton Fall Collection at the M.C.Z. and was dissected by the writer. The type is from Tacoma, Washington; additional specimens were examined from British Columbia, Washington, New Mexico, and Arizona.

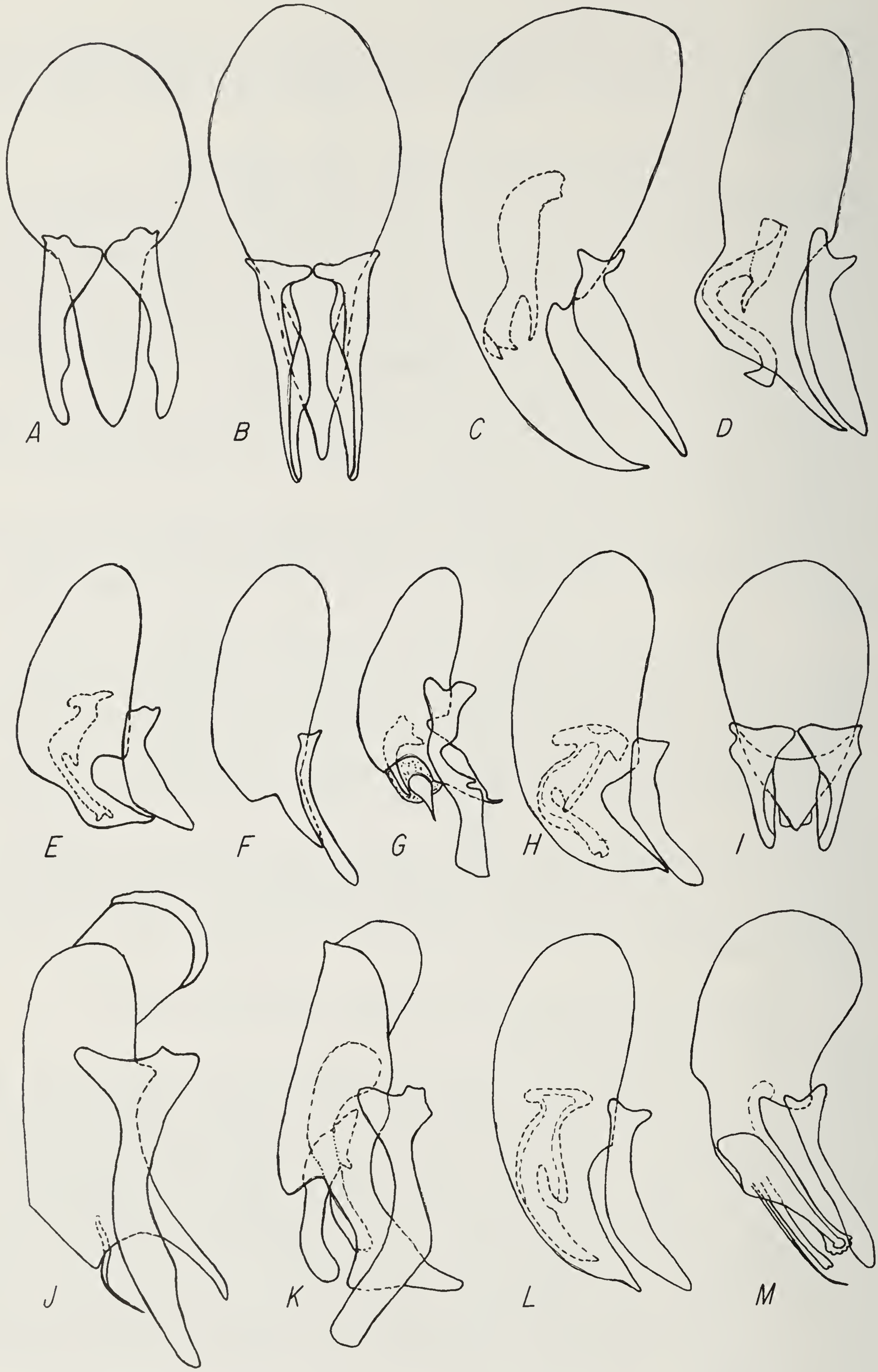


FIGURE 3. Ventral and lateral views of aedeagus of *Eubaeocera* spp. A—*securiforma,* ventral view. B—*deflexa,* ventral view, C—*deflexa,* lateral view. D—*securiforma,* lateral view. E—*cerbera,* lateral view. F—*nana,* lateral view. G—*mitchelli,* lateral view. H—*congener,* lateral view. I—*cerbera,* ventral view. J—*kingsolveri,* lateral view. K—*dybasi,* lateral view. L—*youngi,* lateral view. M—*pallida,* lateral view.

Eubaeocera mitchelli Cornell, NEW SPECIES

Length 1.2-1.4 mm. Scutellum visible, large; antenna as in Figure 4H. Aedeagus as in Figures 2K, 3G, 0.70 mm long, median lobe tapering abruptly to recurved subhamate apex; parameres each angulate, with tooth on inner margin just before middle, base very broad in ventral aspect; internally with flagellum short, scimitar-like posterior end trilobed, flagellar guide-sclerite large, with bulbous base tapering to fine point, internal sac small, sparsely decorated with short spikes, with a retort-like sclerite on sac below flagellum.

Holotype male, Holly Shelter Game Refuge, North Carolina, 24 Sept., 1964, from oak and pine logs and litter (J. F. Cornell and T. B. Mitchell). Type on indefinite loan to U. S. National Museum from N. C. State University. Paratypes as follows: two topotypic in N. C. State University and the author's collection, one Woodbury, N. J., 3.25, (H. W. Wenzel), in Ohio State University collection, two Westville, N. J., 1.22, in Ohio State University and J. F. Cornell Collections, one Florence, South Carolina, 25 Oct., 1962, (V. M. Kirk) in woods trash, in V. M. Kirk Collection, one N. C. Duplin County, 20 Sept., 1964, under pine logs (J. F. Cornell) in U. S. National Museum, one N. C. nr. Aberdeen, abandoned gravel pit, 8 Oct., 1964, (J. F. Cornell, T. B. Mitchell, B. S. Heming) moss with fungi, in California Academy of Sciences. Additional specimens seen, not paratypes, from New Jersey, North Carolina, and Florida.

E. mitchelli n. sp. is readily recognized by its angular, ornate parameres and several lobed median lobe.

I take pleasure in naming this species after Dr. T. B. Mitchell who kindly let me accompany him on several collecting trips that resulted in this and other species being collected.

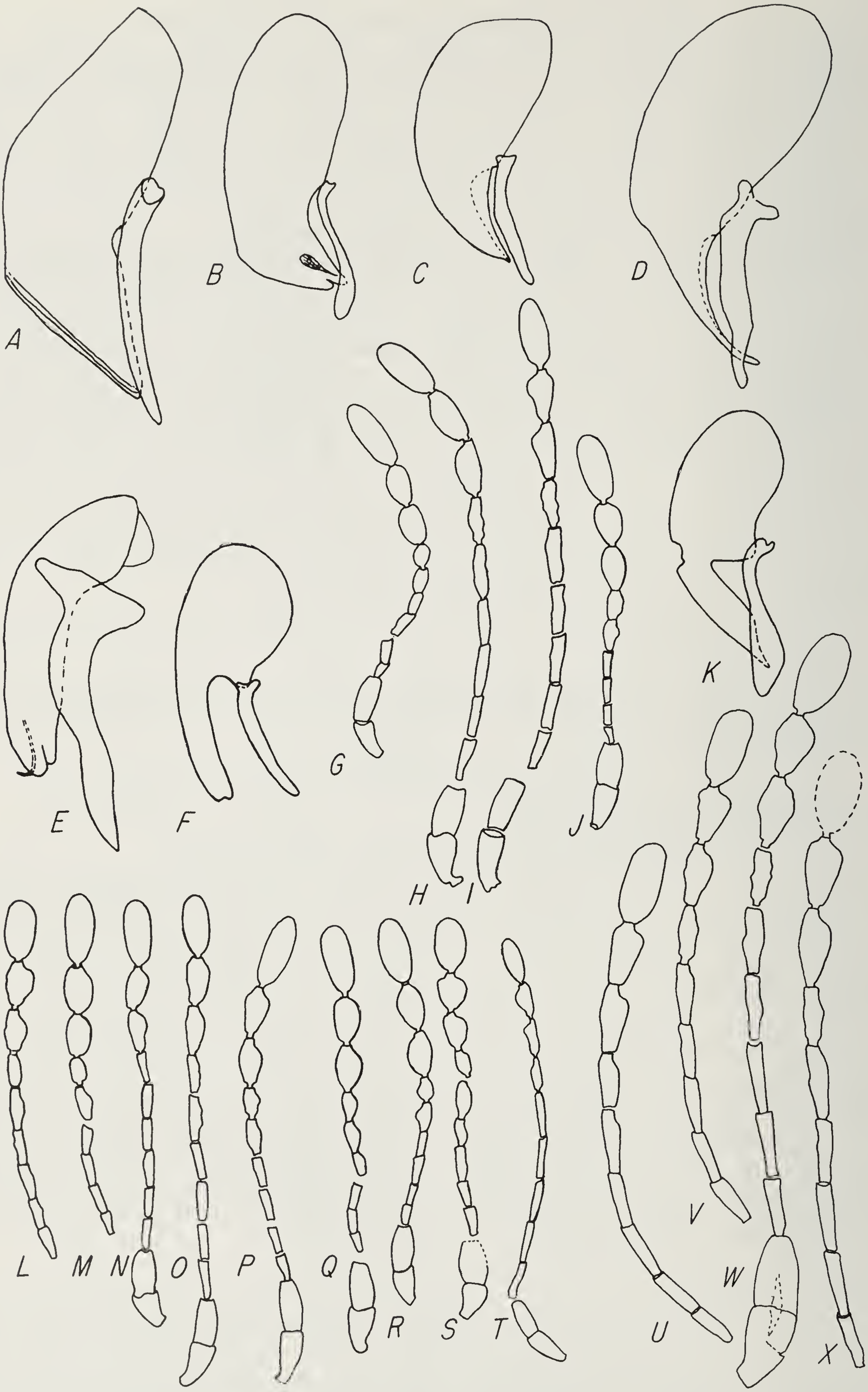
Eubaeocera nana (Casey), NEW COMBINATION

Baeocera nana Casey, 1893:516.
Baeocera rubriventris Casey, 1900:58. (NEW SYNONYMY)

Length 0.90-1.0 mm. Scutellum visible, distinct; antenna as in Figures 4R and 4Q. Aedeagus as in Figures 21, 3F, 0.25 mm long, median lobe tapering abruptly to a rounded point, sharply defined dorsally by almost right-angled bend in dorsal margin of lobe; parameres narrow, extending well beyond apex of median lobe, margins subparallel in ventral aspect, with slight flattened lobes on inner margin just before apex; internally with flagellum large, spirally, asymmetrically coiled, apex sharply curved dorsad, when everted with a faint internal undecorated sac visible ventrad to and anterior to flagellum, no flagellar guide-sclerite visible.

The type specimen of *nana* is in the T. L. Casey Collection at the U.S.N.M. and was dissected by the writer. The type is from Rhode Island; additional specimens have been examined from Massachusetts, New Jersey, Maryland, Illinois, Indiana, West Virginia, North Carolina, and South Carolina. Specimens from Plummer's Island, Md., were on *Stemonites fusca.*

FIGURE 4. Aedeagus and antenna of *Eubaeocera* spp. A—*picea,* aedeagus, lateral view. B—*humeralis,* aedeagus, lateral view. C—*charybda,* aedeagus, lateral view. D—*scylla,* aedeagus, lateral view. E—*abdominalis,* aedeagus, lateral view. F—*apicalis,* aedeagus, lateral view. G—*scylla,* antenna. H—*mitchelli,* antenna. I—*dybasi,* antenna. J—*picea,* antenna. K—*eurydice,* aedeagus, lateral view. L—*apicalis,* antenna. M—*pallida,* antenna. N—*abdominalis,* antenna. O—*kingsolveri,* antenna. P—*charybda,* antenna. Q—*nana,* antenna. R—*nana,* antenna. S—*eurydice,* antenna. T—*deflexa,* antenna. U—*congener,* antenna. V—*cerbera,* antenna. W—*youngi,* antenna. X—*securiforma,* antenna.



See page 15 for caption.

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